Science Lesson Plans

Level 4

Term 3

Science Lesson Plans

Level 4

Term 3

Science lesson Plane.

level =4.

Term =3

Week =1

Explanation

Ask,

- How does sound travel?
- Does it travel up and down or from side to side?
- Explain
- As you know air is all around us, to our ears, **sound waves** travel through air.
- Sound waves move in all directions from the sound source.
- So sound travels in all directions from its source.
- The sounds get softer as we move away from the source. The reason is sound waves become weaker as we move away from the source.
- We can try to block out sound by covering our ears or walking away from the source.

Wrap-up Q/A

Can sounds travel in all directions?

Level 4		**Energy and control**
Term 3	**Lesson plan**	
Week 1		
Day 2		

Topic: sound energy
Objective: Identify parts of a human ear.

Activity: Discussion/explanation

Materials: Chalk, pencils, diagram of ear, workshee

Procedure:

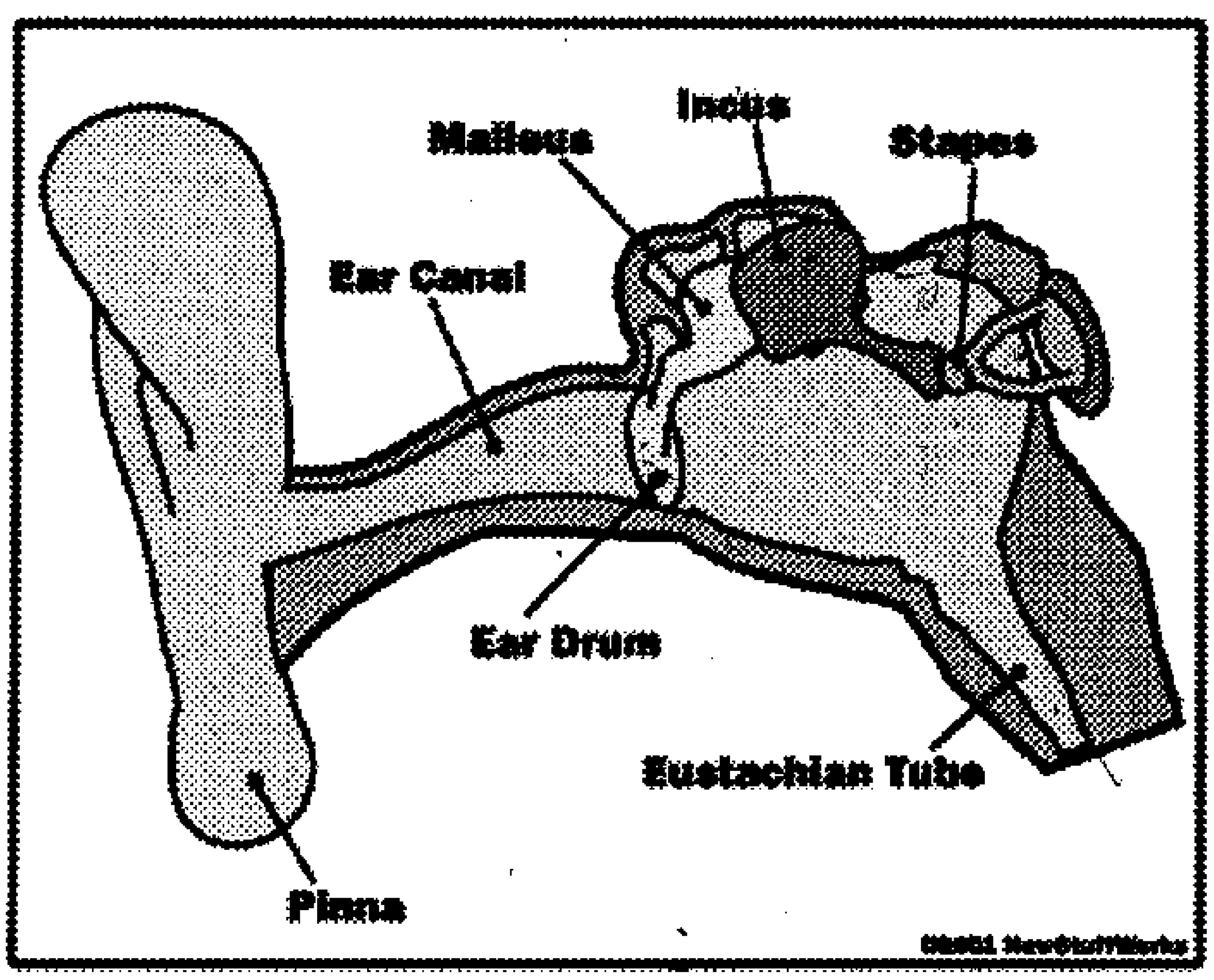
Warm-up Q/A
Which organ of the body helps us to hear?

- Do you know how it works?
- What parts does it have?
- Listen to their responses.

Discussion/explanation

1. Show a drawing of human ear on a chart paper.

2. Discuss the parts of a human ear.



related to sound from page 2

* Describe the completly function of earpart with respect to name

4

Explanation
The ear

- The ear is the sense organ that detects sound waves and sends those signals to the brain for processing.
- **How ear works**
- The way the ear works is that sound waves vibrate the **eardrum,** just inside your ear.
- That sends waves through a fluid inside a narrow tube called the **cochlea,** which in turn vibrates tiny hairs, which are tuned to the different pitches of the sound.
- Information from the vibration of the hairs stimulates **nerves,** which send the signals to the brain for processing.

Level 4 **Energy and control**

Term 3 **Lesson plan**

Week 1

Day 3

Topic: sound energy

Objective: To identify parts of a human ea

Activity: written work

Materials: Chalk, pencils,

Procedure:

Warm-up Q/A

- Revise the concept introduced in the previous lesson.
- Write down the task on the chalkboard and explain.

Task:

Q1) Which sense organ helps you to detects sound waves?

Q 2) Complete these sentences.

a) Sound waves vibrate the____________________ inside your ear. (Eardrum, ear canal)

b)Your ear has a fluid inside a narrow tube called the____________________ __________________(cochlea, anvil)

c)___________________________carry the sound messages to brain. (Nerve cells, skin cells)

Q 3) Draw and color a diagram of ear and label its different parts.

Level 4		**Energy and control**
Term 3	**Lesson Plan**	
Week 1 **Day** 4		

Topic: sound energy
Objective: To explore different sounds and identifying the source.
Activity: Mystery objects
Materials 6 tin cans with plastic lids or plastic bottles, different amounts of: safety pins, nails, toothpicks, strands of raw noodles, pennies, washers, wooden dowels, cork, straws, paper clips, OR marbles. (You only need 6 materials)
Procedure
Warm-up Activity
Have students sit quietly in the room with their eyes closed, for two minutes.

Have them listen for subtle sounds in the classroom and the surrounding area. What can they hear?

- Then ask them to write down every sound. Do this for two minute.
- Ask, did closing your eyes help you to hear well.
- Listen to their responses.

Activity

Note: Before the activity prepare six plastic bottles by adding different objects in them. Label them as 1, 2, 3, 4, 5, and 6. Place each bottle on a separate desk.

1. Ask the class "By a show of hands, how many of you think you are good listeners?" Introduce the experiment Mystery Sounds.
2. Divide the class into 6 groups and direct each group to a table where one of the 6 tin cans awaits with a mystery item inside.

3. Be sure tables are placed around the classroom so that one group would not be disturbing the next.

4. Distribute a handout to each student and explain that they are to answer individually.
4. Students will rotate through all 6 stations and record their findings on the handout.
Follow-up discussion

Invite the students to share their results.

- Ask the question "Why are there differences in our answers?" and emphasize that we all hear differently.
- Then disclose the names of actual objects and their number in each bottle.
- Ask the students to write in their charts and match with their observations.

Explanation

- We all hear sounds differently.
  If the vibration pattern is changed, the sound changes.
- Sounds vary in loudness and pitch.
- **The length and size of a vibrating object affect the kind of sound it makes.**
- Different materials and objects produce different sounds
  Wrap-up Q/A
- What affects the type of sound an object makes? (The length, size and material of a vibrating object affect the kind of sound it makes).

Level: 4   Term: 3
Week: 2   Day: 1

Sounds Recording sheet

Name____________________ **Date**____________________

No. Of the bottle	Identify Objects	Estimate the Number of Objects	*Type of sound	Actual objects
1				
2				
3				
4				
5				
6				

***Type of sound: Which objects made the loudest noise, quietest, dullest, sharpest, and most annoying noises?**

Level 4 **Energy and control**

Term 3 **Assessment**

Week : 1

Day 5

Q1) Which sense organ helps you to detects sound waves?

Q 2) Complete these sentences.

a) Sound waves vibrate the____________________ inside your ear.
(Eardrum, ear canal)

b)Your ear has a fluid inside a narrow tube called the__________________
__________________(cochlea, anvil)

c)______________________________carry the sound messages to brain.
(Nerve cells, skin cells)

Q 3) Draw and color a diagram of ear and label its different parts.

Science lesson Plan

evel = 4.

ierm = 3

Week = 2

Topic : Sound energy.

Level 4 Energy and control

Term 3 Lesson plan

Week 12

Day 1

Topic: sound energy

Objective: To understand range of sounds humans can hear and those animals can hear

Activity: Making a paper ear

Materials: Paper, Scissors, and pictures of animals

Procedure:

Warm-up Q/A

Show the students animal pictures.

Look at different animals ears. How are they same/different from humans?

Then ask, do you think we can hear all types of sounds?

Activity

Make bigger ears out of the paper and put them to your ears.

Try to listen to sounds.

Does this help you hear well?

Follow-up discussion

Ask

Does this help you hear well?
Why?

Explanation

- The size of outer ears affects the reception of sound.
- Ears have parts--outer, which receive sound vibrations, and inner, which carry sound messages to the brain.

- Usually animals have outer ears large in size and different in shape than humans.
- Ask, what is frequency?
- Then explain, humans cannot hear all types of sounds.
- Most humans can hear sounds ranging between 20hertz to 16000hertz.
- Hertz is a unit to measure the frequency of a sound (vibrations per second).
- Bats can hear sounds, which we cannot hear (100,000 hertz)
- Dogs can hear high-pitched sounds, which we cannot hear. They can hear sounds till 32000 hertz.
- Rats make high-pitched sounds, which we cannot hear. They can make sounds of frequency of 102000 hertz.
- Animals have ears to receive different sounds, such as warning signals from other animals, or mating calls.

Wrap-up Q/A

Can humans hear all sounds?

Level 4		Energy and control
Term 3	Lesson Plan	
Week 2		
Day 2		

Topic: sound energy
Objective: To Identify that sound has a pitch.
Activity: Experiment
Materials: 3 identical empty bottles, a wooden stick or ruler
Procedure

Warm-up Q/A

- Ask, what have you learnt about sounds as yet?
- How are sounds different from each other?
- Then tell sounds are different in many ways.
- Some sounds are loud some are difficult to hear.
- Some sounds are high some are low.
- Ask, the students to give examples of loud and soft and high and low sounds.
- List the examples on the chalkboard.
- Then tell Loudness and softness of a sound is called volume.
- Highness and lowness of a sound is called Pitch.
- Write the word **PITCH** on the chalkboard.
- Tell the students now we will try to understand about the pitch of the sound.

Activity

- 1. Fill the 3 identical bottles with different amounts of water, and ask the students: "Which will give the highest tone when I hit it on the side with the ruler?"

  2. Lift the bottle with 2 fingers at the neck and hit the side of each bottle with the ruler and listen to the pitch of the tone.

  3. Now ask the students: "Will bottle C always give the highest pitch?"

  4. Blow over the bottle mouth, by placing your lower lip on the bottle rim and blowing a narrow stream of air almost horizontally over the mouth. Listen to the tone/pitch.

Follow-up discussion

- Which bottle produced the low-pitched sound?

- Which bottle produced the high-pitched sound?
- **Explanation**
  The more amount of the mass of the material vibrates, the lower the pitch it produces.
- As happened with the bottle in which there was more water. It produced the low pitch sound.
- When blowing over the bottle mouth, the air above the water in the bottle vibrated to produce the tone.
- The larger the column of air in the bottle, the ~~lower~~ higher the pitch.
- As happened with the bottle that has less water in it. It produced high-pitched sound.
  Highness and lowness of a sound is called Pitch.
  Then explain,
- An object vibrating very fast makes high-pitched sounds. Objects vibrating more slowly make lower pitched sounds.

Wrap-up Q/A

- What is pitch of a sound? (Highness and lowness of a sound is called Pitch).
- Which objects make high pitch sound? (An object vibrating very fast makes high-pitched sounds).

Which objects make low pitch sound? (Objects vibrating more slowly make lower pitched sounds).

Level 4		**Energy and control**
Term 3	**Lesson Plan**	
Week 2		
Day 1 3		

Topic: Light and sound energy

Objective: Investigate how sounds become less audible as distance increases

Materials: Ticking clock, Yardstick.

Procedure:

Activity 2: Written work

Warm-up Q/A

- Ask, Can you hear the distant sounds also?
- What happens when we move away from a sound source?
- Why does this happen?
- Listen to their responses and tell now we will investigate how sounds become less audible as the distance from the source increases.

Activity 1

1. Have students estimate how far they think they can walk from a ticking clock until they can no longer hear it.

2. Start in front of the clock and take one-steps back.

3. Continue until you can no longer hear the clock.

4. Measure the distance with a yardstick.

5. Tell them to write down the correct distance from the clock to where they could no longer hear it.

Follow-up discussion

- Invite the students to share their findings.
- **Ask, what was the correct distance from the clock to where they could no longer hear it.**
- Ask,
- What did you learn from this activity?
-

Explanation

When vibrations reach our ears, we hear the sound. The farther from the source we move, the softer sounds become.

- This happens because the sound waves become weaker at a distance.

Wrap-up Q/A

Why do sounds become inaudible at a distance from the source?

Activity 2 IN. Work.

- Task answer these Question
- Why sound become inaudible at distance Source?
- If music playing on a radio?
- What happened when you move away [illegible]
- What happened when you move towards radio
- Do all object make same kind of sound.
- What affect the type of sound [illegible]

Level 4 Energy and control

Term 3 **Lesson Plan**

Week 2

Day 4

Topic: sound energy

Objective: To explore that sound travels through substanc

Activity: making a telephone

Materials: Paper cups, string, candle, nail

Procedure

Warm-up Q/A

- How do sounds reach to our ears? (Sounds travel through air)
- Can sounds travel through other materials also?
- Have you ever experienced listening sounds through other materials such as water?
- Listen to their responses and then tell we will try to find it out now.

Activity: 1

1.Hold you ear against a tabletop while someone taps and scratches lightly against the other end of the table. Do hear any thing?

Activity: 2

1. Make a hole in the bottom of the two tin cans with the nail.

2. Rub the candle along the entire length of the string, leaving a wax film on the string.

3. Insert one end of the string through the hole on the outside of one can, secure with a large knot from the inside of the can. Repeat with the other can.

4. Have 2 students go to opposite corners of the room holding the tin cans so the string is taut.

5. Have one student say something in the can speaking softly. Could the other student hear what was said?

6. Now, have the student who talked into the can say something again, this time speaking softly but not talking into the can. Could the other student hear what was said this time?

Note: For best results students have to keep the string tight.

Follow-up discussion

- Activity: 1
- Did you hear the scratching sound with your ear on the desk?
- Did you hear the scratching sound after lifting your ear off the desk?
- Activity: 2
- Invite the students to share their observations.
- What did you learn from this activity?
- Were the sounds always easy to hear?
- Why?
- Would the telephone have to be held a certain way for best results?

Explanation

- Sound travels well through the air but it travels faster through liquids such as water and best of all through solids such as wood, metals etc.
- You have just tested it how well sound travels through solids by resting your ear on the desk and scratching it.
- You were able to hear the scratching easily. But when you raised your ear off the table you could not hear the scratching. Sounds can travel all kinds of solid materials including stone, bricks, glass and metals.
- Similarly you were able to hear through the string also.

Wrap-up Q/A
Can sounds travel through other materials?

Des

Level 4		**Energy and control**
Term 3	**Assessment**	
Week 2		
Day 5		

Task: answer these questions.

- Why do sounds become inaudible at a distance from the source?
- If music is playing on a radio:
- What happens when you move away from the radio?
- What happens when you move towards the radio?
- Do all objects make the same kind of sounds?
- What affects the type of sound an object mak

Science lesson Plans.

level: 4

Term: 3

Week: 3 .

Topic Sound energy.

Topic: sound energy
Objective: To Identify that sound has a pitch.
Activity: Experiment
Materials: 8 glasses, water, ruler
Procedure

Activity 2. Written Work

Warm-up Q/A

Ask, what have you learnt about pitch of a sound?

Activity

1. Line up 8 bottles that are alike.

2. Fill them to different levels with colored water.

3. Tap the bottles with a ruler.

4. By arranging the water levels in the bottles, make a musical scale.

5. Play a song.

6. Invite the students one by one to try it out.

Follow-up discussion

- **Ask,**
- Are you recognizing the sounds of different pitch?
- Which glass produced the low pitch sound?
- Which one produced the high pitch sound?

Explanation

- Explain,
- The pitch of a note is determined by the mass of the vibrating object: the larger the mass, the lower the pitch.
- The pitch of a sound is also determined by the number of times an object vibrates in a given period of time (frequency).
- An object vibrating very fast makes high-pitched sounds.
- Objects vibrating more slowly make lower pitched sounds.

Wrap-up Q/A

What factors determine the pitch of a sound?

Activity 2: Written Work.

Task: Answer these Question.

- What is pitch of sound?
- Which object make high pitch sound?
- Which object make low pitch sound?
- What factor determine the pitch of sound?
- What is volume?

Level 4		**Energy and control**
Term 3	**Lesson plan**	
Week 3		
Day 2		

Topic: sound energy

Objective: To recognize that pitch can be determined by frequency.
Activity: Experiment
Materials: String, Washers, Tape

Procedure:
Warm-up Q/A

Ask, what is pitch of a sound.

- Which objects make high pitch sound?
- Which objects make low pitch sound?

- What factors determine the pitch of a sound?
- What is volume?

Activity
1. Make a pendulum by tying a piece of thread and a washer.

2. Tape the pendulum to the side of your desk.

3. Count the number of complete back and forth swings in one minute.

4. Make a record of the number of swings.

5. Try it again using 2 washers. Then try again using a longer piece of string.

6. Ask, the students to make observations.

Follow-up discussion

- Ask, what did you observe,
- How many number of complete back and forth swings it made in one minute.
- Tell these back and forth swings are called vibrations.
- How many vibrations the pendulum made in one second.
- The number of vibrations it made in one second is called frequency.
-

Explanation

- Discuss the meaning of frequency. The number of times per second an object vibrates is its frequency.
  How many swings a pendulum makes in a unit of time is called its frequency.
- The more swings per unit of time, the higher the frequency.
  When we relate it to the pitch of sound we see.
- An object vibrating very fast makes high-pitched sounds.
- Objects vibrating more slowly make lower pitched sounds.
- The number of times per second an object vibrates is its frequency.
- An object vibrating many times a second has high frequency.
- An object vibrating only a few times a second has a low frequency.

- **Wrap-up Q/A(written work)**
- What is frequency? (The number of times per second an object vibrates is its frequency).
- Which objects have low frequency? (An object vibrating only a few times a second has a low frequency.0
- Which objects have high frequency? (An object vibrating many times a second has high frequency.).
- **H.W revise the work done in class.**

Level 4	**Energy and control**
Term 3	**Lesson plan**
Week 3	
Day 4	

Topic: ~~Light~~ and sound energy

Objective: To identify sounds that can be uncomfortable to humans.

Materials: Worksheet

Procedure:

Warm-up Q/A

Ask, Do you like all types of sounds?
What sounds are annoying?
Then write on the chalkboard,

1. List all the sounds in the classroom that can be too noisy.

2. List all the sounds outside that can be too noisy.

Follow-up discussion

Compare responses.
Discuss, which sounds are considered as noises.

(Mostly the loud sounds will be considered as noise)

Explanation

Explain,

Noise is unpleasant or unwanted sound.
Noise is caused by sounds that are too loud and can damage our hearing.
Humans have a responsibility to control people-made noises.

Noise is made by an irregular pattern of sound waves.
Noise can be measured. The loudness f sound is recorded by measuring the energy of the sound wave.
It is measured in decibels (db).
A whisper can produce a 20 db of sound energy. Ordinary talking measures about 60 db. A jet aircraft can produce about 120 db of sound energy.

Activity: 2 distribute the worksheet and explain the task.

Wrap-up Q/A

How is noise caused?

Level: 4 Term: 3
Week: 3 Day: 4

Noise Worksheet

Q 1) Which one of these sounds is considered noise? Why?

Sound	Decibels
Space craft	200+
Jet aero plane	120
Electric Drill machine	100
Heavy traffic	80
Vacuum cleaner	70
Conversation	60
Whisper	20
Rustling leaves	10

____

What is noise?

____

____

How is noise made?

____

____

____

How is noise measured?

____

____

____

____

What is the unit of noise measurement?

____

____

.evel 4		**Energy and control**
Term 3	**Assessment**	
Veek 3 **Day 5**		

Task:

- What is pitch of a sound?

- Which objects make high pitch sound?
- Which objects make low pitch sound?

- What factors determine the pitch of a sound?
- What is volume?
- What is frequency?
- Which objects have low frequency?
- Which objects have high frequency?
- How is noise caused?

Science lesson Plans.

level = 4.

Term = 3.

Week = 4.

Topic : Sound energy.

Term 3

Lesson Plan

Week 1

Day 8

Topic:

Objective: To explore that sound travels through different materials.

Activity: Experimenting with materials

Materials: Ticking alarm clock, book, a plastic bag filled with water, woc plastic bags

Procedure

Warm-up Q/A

Ask,

Can sound travel through different materials?

Then tell we will try to investigate which materials transmit sound best.

Activity:

1. Fill plastic bags with different substances, e.g., a book, water, air, a piece of iron, etc.

2. Hold a ticking alarm clock up against the bags (keep the clock the same distance away from the ear).

3. Cover the other ear and see which substances best transmit the sound.

4.After experimenting with each material, place the clock at same distance and try to listen through air.

5. Ask the students to record their observations.

Follow-up discussion

- Invite the students to share their results.
- Through which material sound traveled best? Liquid, solid or air
- What did you learn from this activity?
- **Explanation**

  Sound waves travel at different speeds through different materials.
- They travel faster through liquids and solids than they do through air

Wrap-up Q/A

Through which material sound traveled best?

Level 4		**Energy and control**
Term 3	**Lesson plan**	
Week 4		
Day 1		

Topic: materials that transmit, reflect or absorb light and sound

Objective: To understand how properties of materials affect the nature of sounds.

Materials: an alarm clock, a cardboard carton, soft pillow, old news papers

Procedure:

Warm-up Q/A

1. Put the alarm clock in empty carton close it and listen to the sound. What does it sound like?
2. Then fill the box with soft pillows place the clock inside and listen to the sound. What does it sound like?

3. Then fill the box with newspapers, place the clock inside and listen to the sound. What does it sound like?

4. Listen again. How is it different?

Follow-up discussion

Ask, the students.

What was the difference in the loudness of sound of the clock in each situation?

Why was it different?

Explanation

- Sound is affected by other materials and objects.
- A sound wave can be reflected, absorbed or transmitted, when it comes into contact with an object.
- Some materials absorb sound. Just like the soft pillows in this experiment absorbed the sounds.
- Some materials absorb so much of the sound that it may be transmitted through the material for only a very short distance.

Wrap-up Q/A (written work)

- Can some materials absorb sounds?
- Which materials do you think would absorb sounds? List them from best to worst.
- Newspapers, polythene, woolen cloth, cotton wool, sheet of foam.

Level 4		**Energy and control**
Term 3	**Lesson Plan**	
Week 4 **Day 4**		

Topic: Light and sound energy

Objective: To explore that sound travels through different materials

Activity: written work

Materials: chalk, pencils, note books

Procedure

Warm-up Q/A
Revise the concept introduced in the previous lesson.
Write down the task on the board and explain.
Task:

- How does sound travel?
- Do Sound waves move in all directions from the sound source?
- Can sounds travel through other materials?
- Through which material sound travels best?

H.W Revise the work done in class.

Level 4		**Energy and control**
Term 3	**Assessment**	
Week 4 **Day 5**		

Task:

- How does sound travel?
- Do Sound waves move in all directions from the sound source?
- Can sounds travel through other materials?
- Through which material sound travels best?

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level = 4

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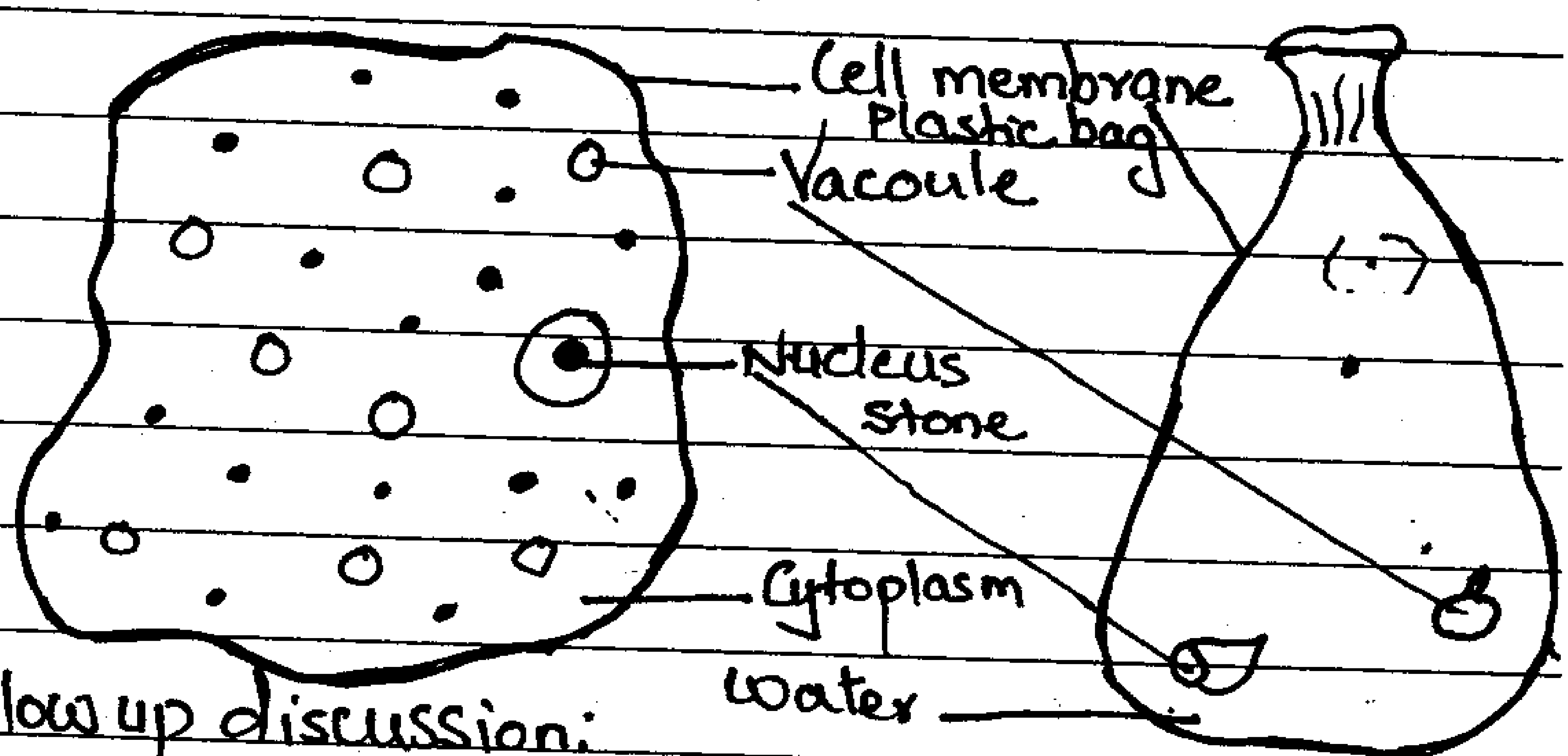
Week =

Topic : Basic unit of Life.

W=5
L=4
T=3

D = 1 CELL

Topic : Basic Unit of life.
Objective : Understand about animal cell.
Activity:
Material:
Plastic bag. water. Pebble. ring.
Procedure:
Fill Plastic bag with water. put pebbles and rings inside bag Now compare the bag to diagram of cell.



follow up discussion:

- What are main Parts of cells.
- Cell membrane. Cytoplasm. nucleus. Vacuoles.

Explaination: cell is basic unit of our body. eg many bricks arrange in certain together to form wall. cell Parts perform many function.

- Cell membrane. To protect nucleus and cytoplasm. To allow food. water oxygen, carbondioxide to enter and exit

cytoplasm help in formation and distribution of food. Keep nucleus vacoule and other part of cell in place.

- Nucleus: Control all activities of other part of cell control and process of cell-division.

Wrap Q/A

What do you learn from this activity?
What are main parts of cells.

-xplaination:

Cell membrane All part of cell, cell membrane cytoplasm. Nucleus are some also in function but new part are Chloroplast.
function of chloroplast is chloroplast is green substance called chlorophyll. This is why plant give green colour.

rap Q/A
What do you learn from this activity.
o you feel any difference between nimal and plant cell.

W — 5
L — 4
T — 3
D — 3.

Topic: Basic Unit of Life.

Objectives: Understand about plant and animal.

Activity: 1 Written work.

Warm up Q/n

- What is cell?
- What are main Parts of cell?
- What are main difference b/w animal and plant cell?

Explanation:

Animal cell:-

- Outermost layer called cell membrane.
- nucleus in centre.
- Many small vacoule.
- No chloroplast.

Plant cell:-

- Outermost layer called cell wall.
- Nucleus near cell wall.
- It has one large vaccoule generally in centre.
- Contains Chloroplast with green substance called chlorophyll.

Activity 2. written work note book.

Task:

- Write difference between animal cell and Plant cell?

W — 5
D = 4
L = 4
T = 3

Topic Basic Unit of life:-

Objective Understand about tissue and Organ.

Activity 1. making model of cell tissue

Activity 2. Observe Prepared Slides

Material: Brick/stone, clay. microscope, Slide.

Warmup Q/A

- What do you think How your class-room are build?
- You Know what material use for Construction?

Explain:

Bodies of animal and plant made up of billions of cells. Each part of body made up of group of cell that perform same functions.

- Such group of Specialized cells called tissue muscle tissue made up of elongated cell which can contract and relax and help body. parts move or work. e.g leaf in the presence of Sunlight making food. Root absorb water and salt from ~~Sunlight making food.~~ soil. Many organ working together

make up an organ System.

Activity 2

Take microscope and put slides under microscope and observe different slides

W − 5
L − 4
D = 5
T = 3

Assesment:

Use the Question at The give end of lesson:

Science lesson Plans.

Level = 4.

Term = 3

Week = 6

Topic Biological system of human body.

Level 4 **Term 3** **Week 6** **Day 5**	**Assessment**	**Structures and mechanisms**

Note: use worksheets and questions given with the lessons.

Science Revision Plans

Level 4
Term 3
Week 7

Week	Curriculum Strand	Topic	Day	Specific Objective
7	Energy and control	Light and sound energy	1	Revision
7		do	2	Revision
7		do	3	Revision
7			4	Revision
7		do	5	Assessment

Science Revision Plans

Level 4
Term 3
Week 8

Week	Curriculum Strand	Topic	Day	Specific Objective
8	Structures and mechanisms	Pulleys and gears	1	Revision
8		do	2	Revision
8		do	3	Revision
8			4	Revision
8		do	5	Assessment